WHAT IS CLAIMED IS:

1. A signal processing system having a normalized output signal comprising:

a first signal source;

a second signal source;

a signal combining means connected to said first and second signal sources for forming an output signal by linking signal segments derived from said first and second signal sources into a series of said signal segments;

a level processor means connected to said signal combining means for determining a level of intensity of said output signal; and

a level adjusting means connected to at least one of said signal sources and responsive to said level processor means for adjusting a level of intensity of said signal segments from said at least one of said signal sources such that said level of intensity of said output signal is normalized.

2. The system of claim 1 wherein said level processor means determines said level of intensity of said output signal for signal segments derived from said first signal source, and said level adjusting means adjusts said level of intensity of said signal segments at said second signal source as a function of said level of intensity of a preceding signal segment from said first signal source.

3. The system of claim 1 wherein said level processor means generates a target level and an error level related to the difference between said target level and said level of

intensity of said output signal, and said level adjusting means adjusts said level of intensity of said signal segments as a function of said error level.

4. The system of claim 3 wherein said target level is a function of said level of intensity of said output signal for signal segments derived from said first signal source.

5. The system of claim 3 wherein said level processor means includes a reference level means for generating said target level at a fixed predetermined value.

6. The system of claim 3 wherein said level processor means includes level storage means for storing said error levels and the corresponding source of said signal segment, and said level adjusting means adjusts said level of intensity of said signal segments as a function of corresponding ones of said error levels stored in said level storage means.

7. The system of claim 1 wherein said level processor means includes a reference level means for generating a predetermined fixed reference level, and said level processor means determines an error level related to the difference between said level of intensity of said output signal and said fixed reference level, and said level adjusting means is connected to said first and second sources for adjusting said level of intensity of said signal segments at corresponding ones of said signal sources.

8. The system of claim 3 wherein said first signal source includes cue means for marking borders of said signal segments, and said second signal source being responsive to said cue means for generating signal segments and for causing said signal combining means to link said signal segments at said borders.

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7. ~~9.~~ The system of claim 6 ~~8~~ wherein said level adjusting means adjusts said level of intensity of said signal segments at said borders of said signal segments.

8. ~~10.~~ The system of claim 6 ~~8~~ wherein said first and second signal sources include audio signals and said level of intensity corresponds to the loudness of said audio signals.

9. ~~11.~~ A signal transmission system for producing a composite output signal formed by linking signals from a plurality of signal sources comprising:

a first signal source means for generating a series of first signal segments and cue tones indicating the borders of said first signal segments;

a second signal source means connected to said first signal source means and responsive to said cue tones for generating a series of second signal segments;

a signal combining means connected to said first and second signal source means for forming said composite output signal by alternately linking said first signal segments with said second signal segments;

a level processor means connected to said signal combining means for determining a level of intensity of said composite output signal; and

a level adjusting means connected to at least one of said signal source means and responsive to said level processor means for adjusting a level of intensity of signal segments from said at least one of said signal source means such that said level of intensity of said output signal is normalized.

10. ~~12.~~ The system of claim 9 ~~11~~ wherein said first signal segments and said second signal segments include audio signals and said level of intensity corresponds to the loudness of said audio signals.

11. ~~13.~~ The system of claim 10 ~~12~~ wherein said level processor means determines the loudness of a portion of said first signal segments, and said level adjusting means adjusts the loudness of said second signal segments as a function of said loudness of said portion of said first signal segments.

12. ~~14.~~ The system of claim 11 ~~13~~ wherein said level processor means generates a target loudness level and an error level related to the difference between said target loudness level and the loudness of said output signal, and said level adjusting means adjusts said loudness of said output signal as a function of said error level.

13. ~~15.~~ The system of claim 12 ~~14~~ wherein said target loudness level is a function of said loudness of portions of said first signal segments.

14. ~~16.~~ The system of claim 12 ~~14~~ wherein said level processor means includes a reference level means for generating said target level at a fixed predetermined value.

15. ~~17.~~ The system of claim 12 ~~14~~ wherein said level processor means includes level storage means for storing said error levels, and said level adjusting means adjusts the loudness of said signal segments as a function of corresponding ones of said error levels stored in said level storage means.

16. ~~18.~~ The system of claim 12 ~~14~~ wherein said level adjusting means is connected to said first and second source means for adjusting said loudness of said first signal segments and said second signal segments.

17. ~~19.~~ The system of claim 12 ~~14~~ wherein said first signal source means includes cue means for marking borders of said first signal segments, and said second signal source means being responsive to said cue means for generating said second signal segments and for causing said signal combining means to link at least one of said second signal segments to said first signal segments at said borders.

18. ~~20.~~ The system of claim 17 ~~19~~ wherein said composite output signal includes a plurality of said second signal

segments linked between successive ones of said first signal segments, said level processor means determines the loudness of each of said plurality of said second signal segments, and said level adjusting means adjusts said loudness for each of said plurality of said second signal segments.

19. ~~21.~~ The system of claim ~~20~~ 18 wherein said level processor means includes signal signature means for storing predetermined loudness signatures for said signal segments, and for correlating a plurality of samples of said loudness for one of said signal segments with a corresponding one of said signatures to verify the transmission of said one of said signal segments.

20. ~~22.~~ The system of claim ~~21~~ 19 wherein said level processor means includes loudness detector means having a frequency response that substantially resembles the typical response of a human ear.

21. ~~23.~~ A signal transmission system for transmitting an output signal comprising:

a plurality of signal channels, each said channel comprising:

a first signal source means for generating a series of first signal segments and cue tones indicating the borders of said first signal segments;

a second signal source means connected to said first signal source means and responsive to

said cue tones for generating a series of second signal segments;

a first signal combining means connected to said first and second signal source means for forming a channel output formed by alternately linking said first signal segments with said second signal segments;

a second signal combining means connected to each of said first signal combining means for combining said channel outputs for simultaneous transmission;

a level processor means connected to said second signal combining means for determining a level of intensity of signals in one of said channel outputs; and

a level adjusting means connected to at least one of said signal source means in each said channel and responsive to said level processor means for adjusting a level of intensity of said signal segments from said at least one of said signal source means in one of said channels such that said level of intensity of said channel output is normalized.

22. ~~24.~~ The system of claim 21 ~~23~~ wherein each said first signal combining means includes a modulator means for modulating said channel output onto a carrier signal, and said level processor means includes a tunable loudness detector means for selectively detecting loudness for each of said channel outputs.

23. ~~25.~~ The system of claim 22 ~~24~~ wherein said level processor means determines said level of intensity of said

signal segments of one of said channel outputs, and said level adjusting means adjusts said level of intensity of said signal segments for the other of said channel outputs as a function of said level of intensity of said one of said channel outputs.

26. A signal processing method for producing a normalized output signal comprising:

generating a first signal from a first signal source;

generating a second signal from a second signal source;

combining said first and second signals to form an output signal by linking signal segments from said first and second signals into a series of said signal segments;

determining a level of intensity of said output signal; and

adjusting a level of intensity of said signal segments to produce said normalized output signal.

27. The method of claim 26 wherein said determining step includes determining said level of intensity of said output signal for signal segments derived from said first signal, and said adjusting step includes adjusting said level of intensity of signal segments from said second signal as a function of said level of intensity of a preceding signal segment from said first signal.

28. The method of claim 27 wherein said determining step includes generating a target level and an error level related to the difference between said target level and said level of intensity of said output signal, and said adjusting

step includes adjusting said level of intensity of said signal segments as a function of said error level.

29. The method of claim 24 wherein said determining step includes generating said target level as a function of said level of intensity of said output signal for signal segments derived from said first signal.

30. The method of claim 24 further including storing said error levels and the corresponding source of said signal segments, and wherein said adjusting step includes adjusting said level of intensity of said signal segments as a function of said error levels stored in said storing step.

31. The system of claim 26 wherein said determining step includes generating a predetermined fixed reference level, and determining an error level related to the difference between said level of intensity of said output signal and said fixed reference level, and said adjusting step includes adjusting said level of intensity of said signal segments for corresponding ones of said first and second signals.

32. The system of claim 26 wherein the step of generating a first signal includes generating cue tones for marking borders of said signal segments, and said step of generating a said second signal includes generating signal segments responsive to said cue tones for combining said signal segments at said borders.

29. ~~33.~~ A signal transmission method for producing a composite output signal by linking signals from a plurality of signal sources comprising:

generating a series of first signal segments and cue tones indicating the borders of said first signal segments;

generating a series of second signal segments in response to said cue tones;

forming said composite output signal by alternately linking said first signal segments with said second signal segments;

determining a level of intensity of said composite output signal; and

adjusting a level of intensity of signal segments such that said level of intensity of said composite output signal is normalized.

30. ~~34.~~ The method of claim 29 ~~33~~ wherein said steps of generating a series of first signal segments and generating a series of second signal segments includes generating audio signals, and said level of intensity corresponds to the loudness of said audio signals.

31. ~~35.~~ The method of claim 29 ~~33~~ wherein said determining step includes determining the loudness for a portion of said first signal segments, and said adjusting step includes adjusting the loudness of said second signal segments as a function of said loudness of said portion of said first signal segments.

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~~36.~~ The method of claim ~~34~~ wherein said determining step includes generating a target loudness level and an error level related to the difference between said target loudness level and the loudness of said composite output signal, and said adjusting step includes adjusting said loudness of said output signal as a function of said error level.

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~~37.~~ The method of claim ~~36~~ further including storing said error levels, and wherein said adjusting step includes adjusting the loudness of said signal segments as a function of said error levels stored in said storing step.

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~~38.~~ The method of claim ~~33~~ wherein said adjusting step includes adjusting said loudness of said first signal and said second signal.

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~~39.~~ The method of claim ~~34~~ wherein said determining step includes storing predetermined loudness signatures for said signal segments, and correlating one a plurality of samples of said loudness for one of said signal segments with a corresponding one of said loudness signatures to verify the transmission of said one of said signal segments.

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~~40~~ The system of claim ~~39~~ wherein said determining step includes detecting said loudness as a function of the frequency response of the typical response of a human ear.

37.
~~41~~ A signal transmission method for transmitting an output signal comprising:

generating composite output signals in each of a plurality of signal channels comprising:

generating a series of first signal segments and cues indicating the borders of said first signal segments;

generating a series of second signal segments in response to said cues; and

forming a channel output by alternately linking said first signal segments with said second signal segments at said borders in response to said cues;

combining said channel outputs for simultaneous transmission;

determining a level of intensity of signals in one of said channel outputs; and

adjusting a level of intensity of each of said channel outputs as a function of said one of said channel outputs such that said levels of intensity of said channel outputs are normalized.

38. ~~42.~~ The system of claim 37 ~~41~~ wherein said step of forming a channel output includes modulating said signal segments onto a carrier signal, and said determining step includes detecting and demodulating a preselected one of said channel outputs for selectively determining loudness for each of said channel outputs.